

## **NCCN Draft Monitoring Protocol Summary**

### **Wildlife Workgroup**

**Title: Elk Monitoring** (version 5/28/05)

**Parks:** OLYM, MORA, LEWI

**Justification:** Ungulates, including elk, are often keystone species due to the pronounced effects of their herbivory and trampling on vegetation composition and structure, plant succession, nutrient cycling, and ecosystem processes. In addition, in many environments, elk serve a key role as prey for large carnivores and scavengers. Hence, significant changes in elk populations, either increasing or decreasing, would affect many ecological, cultural and wilderness values of several NCCN parks. Information on trends of ungulate populations has important management significance in NCCN Parks due to its bearing on these park's abilities to arbitrate logging, hunting and predator control activities on the park's boundaries (and potentially within park boundaries in the future).

There are several management issues and concerns regarding elk in three National Parks of the NCCN (OLYM, MORA, LEWI) that require sound information on population trend:

- Olympic National Park is home to the largest protected herd of Roosevelt elk in its natural ecosystem—a unique resource that was instrumental in the Park's creation and that today represents one of the 'signature' resources for which the Park is renowned.
- Over several decades, there has been recurrent controversy regarding the ecological effects of overabundant elk on ecological integrity of subalpine meadows in Mount Rainier National Park and of lowland rainforest communities in Olympic National Park.
- Despite protection within National Parks, elk populations have declined by 40-60% in many areas adjoining these parks, and there are legitimate concerns that migratory subpopulations that leave the parks during autumn and resident herds that live along park boundaries may be subject to similar pressures (habitat loss due to development, habitat deterioration due to forest management practices, predation, and increased legal or illegal hunting).
- High hunting pressure on branch antlered bulls outside parks can have significant effects on park elk herd composition. Research on mature breeding bulls in OLYM has shown that elk that reside over 20 miles in the park interior migrate outside of the park during the rut, where they are vulnerable to extensive state and tribal hunting seasons.
- Substantial predator control activities adjacent to Mount Rainier National Park could result in negative impacts to predator populations. Reduction in predation is likely to promote population growth of elk inside the park and generate renewed concern over the ecological integrity of the Park's renowned subalpine meadows.

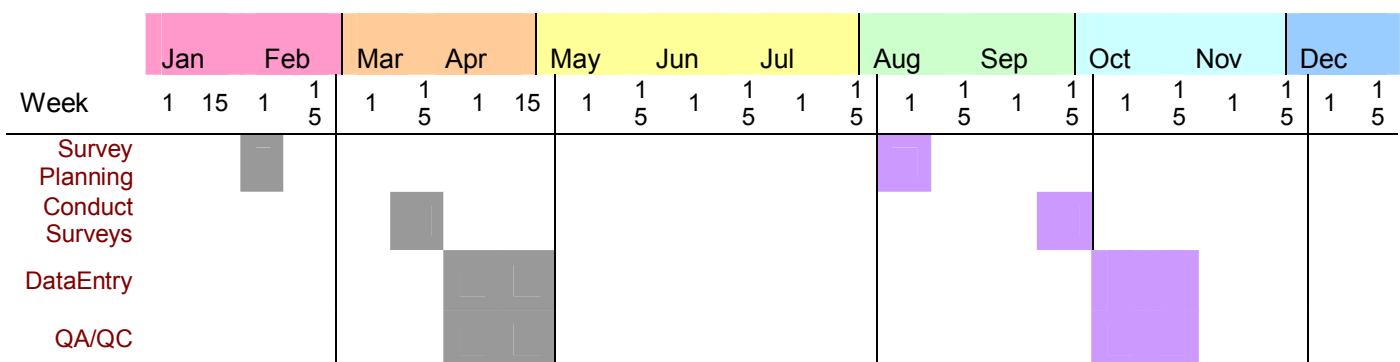
- There is persistent interest among local Native American tribes to reclaim hunting rights inside current boundaries of Olympic National Park. Up-to-date information on status and trends is likely to be important in future arbitrations.
- There have been recurring proposals to introduce wolves back to Olympic National Park and hopes that wolves will naturally recolonize the Cascades from Canada. Up-to-date information on status and trends of elk is needed to assess feasibility of wolf reintroduction.
- Nationally, the increased prevalence of wildlife diseases (e.g., chronic wasting disease, mad cow disease, others) threatens ungulate populations and is a growing concern.
- Elk are a key component of Lewis and Clark National and State Historical Parks (LEWI) ecological and cultural resources. Due to the park's size and shape, LEWI elk populations are highly dependent in management outside the park. Ongoing and impending land use and management changes will likely negatively impact the park's elk. Prior to monitoring, the park needs information on elk herd movement and distribution patterns, critical habitat, effects of outside landscape use changes, linkages for movements, and the consequent effects on the park's elk population. Once this information is gained, LEWI will need ongoing monitoring of 1) land use outside the park, and 2) elk numbers and use patterns inside and adjacent to LEWI.

**Monitoring Objective:** Determine trends in abundance of elk populations inhabiting low-elevation winter ranges in Olympic National Park during spring, high-elevation summer ranges in MORA and OLYM, and using park and adjoining lands in LEWI.

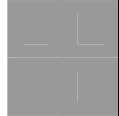
*What environmental resource will be monitored (target population)?* We propose to monitor trends in counts of elk observed during aerial surveys of low elevation floodplain forests during the spring in OLYM and high-elevation subalpine meadows during autumn in OLYM and MORA. Further, while under development, we propose road and aerial surveys of elk abundance in LEWI. *Justification:* OLYM and MORA have historical data from aerial surveys of these areas. The areas were chosen because elk herds are most visible during these times of the year in these habitats.

*What will be measured (i.e., specifically the measurable attribute)?* Raw counts of elk observed from standard aerial survey protocols will yield data on population trends. It will also include sex and age composition counts of elk on subalpine meadows at MORA and OLYM. We will pursue improving the protocols in the future to include adjustments for visibility biases once appropriate corrective models are developed, or double sampling methods have been tested and developed, to allow more accurate trend and population estimates.

*Where will it be monitored?* Aerial surveys will be flown over (i.e., inference is limited to) low-elevation floodplain forests of the Hoh, South Fork Hoh, and Queets drainages in OLYM, high-elevation summer ranges of the North and South Rainier elk herds in MORA, and high elevation subalpine habitats from High Divide, Bailey



Reporting  
Records  
Mgmt



**Objective 1 - Proposed budget:**

<b>OLYM Low-Elevation Surveys</b>	
Helicopter (14 hours @ \$780/hr)	\$10,920
Pilot Per Diem (5 days @ \$120/day)	\$600
Fuel Truck	\$1,000
Crew Hazard Pay	\$720
<b>Subtotal</b>	<b>\$13,240</b>
<b>OLYM High-Elevation Surveys</b>	
Helicopter (10 hours @ \$780/hr)	\$7,800
Pilot Per Diem (2 days @ \$120/day)	\$240
Fuel Truck	\$1000
Crew Hazard Pay	\$480
<b>Subtotal</b>	<b>\$9,520</b>
<b>MORA High-Elevation Surveys</b>	
Helicopter (10 hours @ \$780/hr)	\$7,800
Pilot Per Diem (2 days @ \$120/day)	\$240
Fuel Truck	\$1000
Crew Hazard Pay	\$480
<b>Subtotal</b>	<b>\$9,520</b>
<b>LEWI Elk Surveys</b>	
Helicopter (2.5 hours @ \$780/hr)	1,950
Biol Technician (1 pp@ \$1105)	1,105
<b>Subtotal</b>	<b>3,055</b>
<b>Grand Total Objective 1</b>	<b>\$35,350</b>

